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Description of a New Cottid Fish, *Icelinus japonicus*, from Japanese Waters

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Abstract A new species of the family Cottidae, *Icelinus japonicus*, is described from the Japanese waters. This species is characterized by long rows of ctenoid scales along the bases of the dorsal fins, separate openings of the anterior mandibular pores, no spines on the dorsal surface of the head, no cirrus at the base of each nasal spine, and small number of lateral line scales. The present species is the first record of this genus from Japanese waters.

One specimen of an undescribed cottid fish was collected from off Yamaguchi Prefecture, Seto Inland Sea, in 1951. After about 25 years, five specimens of the same species were collected from the littoral zone (depth 5～20 m) off Sado Island, the Sea of Japan, by a small beam trawl for shrimps. They have all generic characters of the genus *Icelinus* Jordan, 1885, known only from the eastern North Pacific. The present species is distinguishable from eight known species of this genus in several aspects. Therefore, we describe this species as new under the name of *Icelinus japonicus*. The present species is the first record of this genus from Japanese waters.

The specimens examined here were deposited in the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University (HUMZ), and in the Department of Zoology, National Science Museum, Tokyo (NSMT-P).

Measurements were made in accordance with those of Hubbs and Lagler (1958). All fin ray elements were counted. Count of lateral line scales was made from the first scale to the end of the hypural. The vertebrae were counted from radiographs. The caudal vertebrae were counted starting with the first vertebra having a haemal spine and ending with the urostylar vertebra.

***Icelinus japonicus*, sp. nov.**

(Figs. 1, 2)

(New Japanese name: Futasuji-kajika)

Holotype: HUMZ 79035, a female, 52.3 mm in total length, 42.8 mm in standard length, Mano Bay off Sado Island (37°57′N, 138°19′E), Niigata Prefecture, Japan, on February 16, 1978.

Paratypes: HUMZ 75466, a female (59.5 mm TL, 48.4 mm SL), Seto Inland Sea off Yashiro Island, Yamaguchi Prefecture, Japan, in February, 1951; HUMZ 77562, 77563, NSMT-P 18575, 3 females (45.7～50.8 mm TL, 38.2～41.6 mm SL), Mano Bay off Sado Island, Niigata Prefecture, Japan, on December 23, 1977.

Non-type material: HUMZ 77561, a male (57.9 mm TL, 47.9 mm SL), Mano Bay off Sado Island, Niigata Prefecture, Japan, on December 23, 1977. This specimen was excluded from the designation of the type-series, because the first dorsal fin was malformed.

Diagnosis. The present species differs from all other species of this genus in the combination of the following characters. Two rows of ctenoid scales extending along the dorsal fin base originate in front of the origin of the first dorsal fin and end in the middle part of the caudal peduncle. Anterior pores of mandibular series open separately on either side of the symphysis (Fig. 2). There are no scales behind the pectoral axilla; no spines on the dorsal surface of the head; no cirrus at the base of the nasal spine. The number of lateral line scales is 33 (35 or more in other species).

Description. Counts and proportional measurements of the holotype and paratypes are shown in Table 1.

Body heavy and robust, slightly compressed,

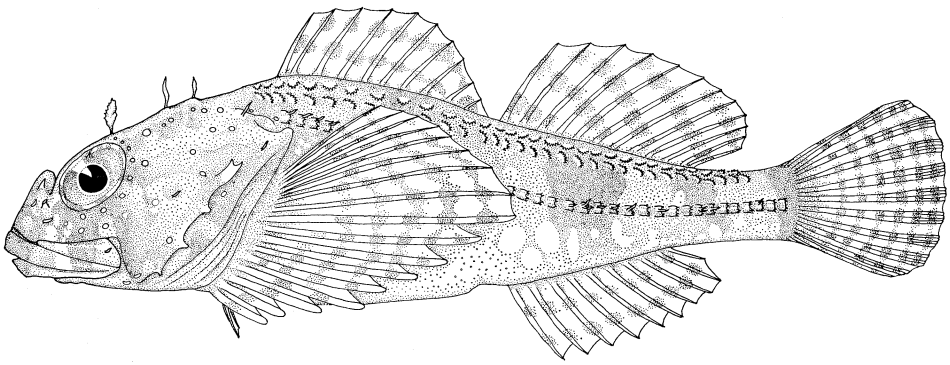

Fig. 1. Holotype of *Icelinus japonicus*, sp. nov. HUMZ 79035, female, 42.8 mm SL.

its depth at origin of pelvic fin about 1/4 of standard length. Depth of caudal peduncle 1.3 in diameter of orbit. Head large and slightly compressed, its length 1.6 times body depth. Mouth terminal; lower jaw somewhat shorter than upper jaw, slightly included. Upper jaw extending beyond posterior margin of pupil. Anteriormost pore of mandibular series on either side of symphysis (Fig. 2). Teeth fine, conical, in bands on jaws, vomer and palatines. Snout steep and short, slightly shorter than diameter of orbit. Nasal spine stout. Eye moderate in size, diameter of orbit 2.2 in postorbital head length. Interorbital space narrow and slightly concave, its width 2.8 in diameter of orbit. No spines on the dorsal surface of head. Four spines on preopercle, uppermost spine longest, directed slightly upward, and bifid at distal tip; its length about 1/2 of diameter of orbit. Other three spines short and simple. Branchiostegal membranes broadly united, free from isthmus. No slit behind last gill arch.

Anterior half of lateral line arching, then sloping gently down, posterior half extending along axis of body. Two to four spines on posterior margin of each lateral line scale. Two rows of ctenoid scales extending along back slightly below dorsal fins, originating immediately in front of first dorsal fin and ending behind posterior margin of second dorsal fin base. Scales of upper row with exposed margins facing posteroventrally, those of lower row with exposed margins facing posterodorsally. No scales behind axilla of pectoral fin. Genital papilla of male not enlarged.

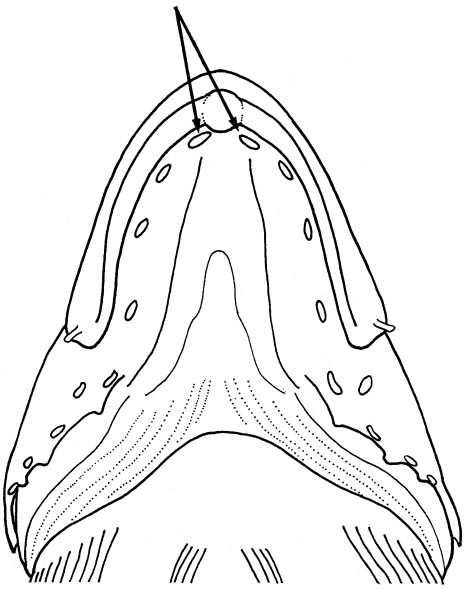

Fig. 2. Diagram showing mandibular pore pattern of *Icelinus japonicus*, holotype, 42.8 mm SL. Arrows indicate anterior pores opening separately on either side of the symphysis.

A well-developed flat cirrus at upper posterior margin of orbit. A long and slender cirrus on middle of fronto-parietal ridge and another at its posterior end. A small and simple cirrus on posterior end of maxillary, one on infraorbital stay and in front of upper end of gill opening. A very small cirrus on upper margin of eye. One or two cirri on some lateral line scales. No cirrus at base of nasal spines.

First dorsal fin originating over slightly in front of upper end of gill opening. First

and second spines of first dorsal fin moderate in height, not elongated. Second dorsal fin separated from first dorsal fin by short distance. Length of second dorsal fin base nearly equal to that of first dorsal fin base. Anal fin originating under between first and second rays of second dorsal fin, ending slightly before under posterior end of second dorsal fin. Uppermost pectoral ray inserted under first dorsal spine, longest rays extending slightly beyond origin of anal fin. Pelvic fin inserted under longest preopercular spine, its length 3.4 in distance between pelvic base and origin of anal fin. All fin rays except for those of caudal fin unbranched. Caudal fin slightly rounded, inner nine rays branched.

Color in alcohol: General ground color pale brown, dorsally slightly darker and ventrally paler. Five irregular dark brownish bars on lateral side of body; anterior two bars not so clear, situating under anterior and posterior parts of first dorsal; third bar

Table 1. Proportional measurements and counts of *Icelinus japonicus*, sp. nov.

Character	Holotype	Paratypes			
	HUMZ 79035	HUMZ 75466	HUMZ 77562	HUMZ 77563	NSMT-P 18575
Standard length (mm)	42.8	48.4	38.2	39.6	41.6
Proportional measurements in standard length					
Depth of body at pelvic origin	4.04	3.87	3.86	3.77	3.96
Head length	2.49	2.42	2.43	2.44	2.48
Snout to first dorsal origin	2.73	2.81	2.89	2.79	2.85
Snout to anal origin	1.69	1.61	1.55	1.68	1.64
Snout to pelvic origin	3.57	3.38	3.35	3.44	3.35
Snout to anus	1.81	1.74	1.66	1.75	1.75
Caudal peduncle length	5.56	5.44	5.88	5.21	5.94
Proportional measurements in head length					
Depth of caudal peduncle	5.21	6.06	5.41	5.59	5.42
Snout length	3.58	3.77	3.65	3.68	3.65
Orbital length	4.10	3.92	4.03	3.95	4.00
Upper jaw length	2.12	2.02	2.07	2.13	2.02
Lower jaw length	2.29	2.22	2.12	2.25	2.10
Interorbital width	11.47	11.11	12.08	12.54	12.00
Postorbital length	1.91	1.96	1.96	2.00	2.02
Longest dorsal spine length	3.51	3.03	3.83	3.77	3.91
Longest dorsal ray length	2.77	2.38	2.57	2.66	2.51
Longest pectoral ray length	1.37	1.20	1.26	1.30	1.28
Longest pelvic ray length	4.00	3.64	3.93	3.86	3.65
Longest anal ray length	3.13	2.82	2.96	2.89	2.90
First dorsal base length	1.40	1.48	1.59	1.40	1.50
Second dorsal base length	1.48	1.52	1.52	1.43	1.46
Pectoral base length	2.42	2.56	2.49	2.38	2.58
Anal base length	1.95	2.33	2.12	2.00	1.93
Counts					
First dorsal spines	10	9	9	9	9
Second dorsal rays	12	13	13	13	13
Pectoral rays	16	15	17	17	17
Pelvic rays	I, 2	I, 2	I, 2	I, 2	I, 2
Anal rays	10	10	11	10	11
Branched caudal rays	9	9	9	9	9
Lateral line scales	33	33	33	33	33
Scales of dorsal rows	63	61	59	56	60
Vertebrae	11+21	11+21	11+21	11+21	11+21

broadest, situating under middle part of second dorsal; fourth bar, situating under posterior part of second dorsal; posteriormost bar on end of caudal peduncle region. Small white blotches under lateral line. Anterior region of snout dark brown. Irregular dark brownish bars on post-orbital, infra-orbital, and cheek regions. Opercular region brownish. All fins except for pelvic white with some irregular dark brownish bands.

Sexual dichromatism: There is no striking sexual dimorphism in this species except for the following points: 1) the general ground color of body darker in male than in female, 2) pelvic fin dark brownish in male, while pale in female, 3) margin of anal fin blackish gray in male, while pale in female.

Remarks. The present species well fits the diagnosis of the genus *Icelinus* in having the following characters: 1) pelvic fin composed of one spine and two soft rays; 2) two rows of ctenoid scales extending along base of dorsal fins; 3) no slit behind last gill arch; 4) branchiostegal membranes united, free from isthmus; 5) presence of vomerine and palatine teeth.

Bolin (1936) reviewed the genus *Icelinus*, and proposed four subgenera: *Tarandichthys*, *Medicelinus*, *Penicelinus*, *Icelinus*. The present species has the status characterizing the subgenus *Penicelinus* in the features of mandibular pores, dorsal scale rows, spines of the dorsal fin, and scales of the pectoral axilla. But it has status of the other subgenera in the features of the genital papilla, pelvic fin, and cirri on tops of dorsal spines. Therefore the present species can not be placed in an existing subgenus without revising the current subgenera of this genus.

Eight species, all from the eastern North Pacific, are currently recognized in the genus *Icelinus*: *I. filamentosus* Gilbert, 1890, *I. tenuis* Gilbert, 1890, *I. cavifrons* Gilbert, 1890, *I. burchami* Evermann and Goldsborough, 1907, *I. fimbriatus* Gilbert, 1890, *I. oculatus* Gilbert, 1890, *I. quadriseriatus* (Lockington, 1880), and *I. borealis* Gilbert, 1895. The present species differs from other species of this genus in the small number of lateral line scales (33 in this species, 35 or more in the other species). In addition to this difference, the present species is sharply distinguishable from *I. filamentosus*, *I. tenuis*, *I. cavifrons* and *I. burchami* having the scale rows along the dorsal base not extending beyond the posterior end of the second dorsal fin base, and from *I. quadriseriatus* and *I. borealis* having anterior pores of mandibular series opening into a common pit on the symphysis. It also differs from *I. fimbriatus* by the absence of spines on the dorsal surface of the head, and from *I. oculatus* by the absence of cirrus at the base of each nasal spine.

The fishes of this genus have been known only from off the western coast of North America and off the Aleutian Islands (Bolin 1936, 1944; Wilimovsky 1964; Barraclough and Butler 1965; Quast and Hall 1972; Hart 1973). *I. borealis* collected from off Attu Island was the most western record of this genus. The present species collected from Seto Inland Sea and from the Sea of Japan is very distant from the localities of other species of this genus. This is the first discovery of the genus *Icelinus* from Japanese waters and is the most western record for the genus.

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Literature cited

Barraclough, W. E. and T. H. Butler. 1965. First record of the dusky sculpin (*Icelinus burchami*) in British Columbia waters. J. Fish. Res. Bd. Canada, 22(5): 1305～1307, fig. 1.

Bolin, R. L. 1936. A revision of the genus *Icelinus* Jordan. Copeia, 1936(3): 151～159, fig. 1.

Bolin, R. L. 1944. A revision of the marine cottid fishes of California. Stanford Ichthyol. Bull., 3: 1～135, figs. 1～40.

Evermann, B. W. and E. L. Goldsborough. 1907.

The fishes of Alaska. Bull. U.S. Bur. Fish., 26: 219～360, figs. 1～144, pls. 14～42.
Gilbert, C. H. 1890. Scientific results of explorations by the U.S. Fish. Commission steamer Albatross. No. XII. A preliminary report on the fishes collected by the steamer Albatross on the Pacific coast of North America during the year 1889, with descriptions of twelve new genera and ninety-two new species. Proc. U.S. Nat. Mus., 13(797): 49～126.
Gilbert, C. H. 1895. The ichthyological collections of the steamer Albatross during the year 1890 and 1891. Report on the fishes collected in Bering Sea and the North Pacific Ocean during the summer of 1890. Rep. U.S. Comm. Fish., 19: 393～476, pls. 20～35.
Hart, J. L. 1973. Pacific fishes of Canada. Bull. Fish. Res. Bd. Canada, 180: iv～ix+1～740, pls. 1～8.
Hubbs, C. L. and K. F. Lagler. 1958. Fishes of the Great Lakes region. Bull. Cranbrook Inst. Sci., 26: 1～213, figs. 1～251.
Jordan, D. S. 1885. A catalogue of the fishes known to inhabit the waters of North America, north of the Tropic of Cancer, with notes on the species discovered in 1883 and 1884. Rep. U.S. Comm. Fish., 13: 1～185.
Lockington, W. N. 1880. Description of new genera and species of fishes from the coast of California. Proc. U.S. Nat. Mus., 2: 326～332.
Quast, J. C. and E. L. Hall. 1972. List of fishes of Alaska and adjacent waters with a guide to some of their literature. NOAA Tech. Rep. NMFS SSRF-658: 1～47.
Wilimovsky, N. J. 1964. Inshore fish fauna of the Aleutian Archipelago. Proc. Alaska Sci. Conf., 14: 172～190, figs. 1～2.

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日本で採集されたカジカ科魚類の1新種フタスジカジカ

矢部　衛・津村　憲・片山正夫

山口県沖瀬戸内海および佐渡沖の日本海より採集されたカジカ科魚類5個体にもとづき，新種フタスジカジカ *Icelinus japonicus* を記載した．本種は，体の背側面に2列の櫛鱗列を持つこと，1棘2軟条からなる腹鰭を持つこと，最後の鰓弓の後に裂孔を持たないこと，口蓋骨歯および鋤骨歯を持つことなどの特徴から，従来北アメリカ太平洋岸およびアリューシャン列島周辺だけから知られていた *Icelinus* フタスジカジカ属（新称）に含まれることが明らかになった。本種は，背側の櫛鱗列が長く，第2背鰭の後縁より後方まで延びること，鰓蓋下顎管の前端の開孔が1対あること，頭部背面に棘がないこと，鼻棘基底に皮弁がないこと，および側線鱗数が本属中もっとも少ないことで，本属の他の種類と明瞭に識別される．

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